

REMARKS/ARGUMENTS

Claims 1, and 53 to 95 are now pending in this application. Applicant has herein amended claim 1 for purposes of clarity and form. Applicant has cancelled claims 2 to 52. New dependent claims 53 to 95 have been added.

The Action has rejected claims 1, 3, 7 to 8, 12 to 39, 46, 48 and 52 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Action has set forth that claim 1 is unclear in that it recites the second section having charcoal particle/mixture "selected from the group consisting of BS 25/44, BS 44/52, BS 52/60, BS 60/72, 72/85 and 85/100 having grain size ranging between 25 mesh to 100 mesh". In this respect, claim 1 has been amended to clarify the claimed invention. Claims 3, 7 to 8, 12 to 39, 46, 48 and 52 have been cancelled in this amendment.

Pursuant to the foregoing, Applicant submits that claim 1 clearly points out and distinctly claims the subject matter that Applicant regards as the invention. Thus, reconsideration and withdrawal of the §112 rejection are respectfully requested.

Applicant notes with appreciation that that claims 20 to 30 would be allowable if rewritten to overcome this rejection under 35 U.S.C. §112, second paragraph, and to include all of the limitations of the base claim and any intervening claims. Applicant believes that claim 1, as amended, is now in condition for allowance and thus all claims which depend therefrom are also in condition for allowance, including new claims 53 to 95.

Patentability Argument.

Applicant provides the following arguments establishing that the rejection under 35 U.S.C. §103(a) should be withdrawn. The Examiner has rejected claims 1, 3, 7 to 8,

12 to 19, 31 to 39, 46, 48 and 52 under 35 U.S.C. §103(a) as being unpatentable over applicant's admitted art in view of Mentzel et al. (U.S. Patent No. 5,423,336). Applicant submits that the claimed present invention is not unpatentable over "applicant's admitted art" ("cited art") in view of Mentzel et al.

In part, claim 1 discloses a filter having specific mesh sizes of activated charcoal selected from the group consisting of charcoal particles having mesh size of BS 44/52, BS 52/60, BS 60/72, BS 72/85, and any combinations thereof for effectively reducing p-benzosemiquinone, a highly reactive major harmful oxidant from the mainstream of tobacco smoke. Applicant submits that Mentzel et al. makes no reference to p-BSQ and the effect of the Mentzel et al. ventilated filter cigarette on reduction levels of p-BSQ, nicotine, and tar delivery is absent in this reference. Additionally, as conceded by the Action, the charcoal used in the charcoal bed of the known charcoal filter cigarettes in the cited art does not have the claimed charcoal particles and sizes. Applicant respectfully submits that the cited art neither describes nor suggests all of the elements of the present invention. For the reasons already stated and for those outlined below, Applicant respectfully traverses the rejection on the grounds that (a) there is no teaching, suggestion or motivation in the cited art for the modification proposed by the Examiner, and (b) a combination of the cited art and Mentzel et al. patents, even if technically feasible, does not yield the invention as recited in the independent claim.

Mentzel et al. refers to a ventilated cigarette. The claimed present invention has an activated charcoal filter having a middle chamber, disposed between the strand side and mouth side filter sections. The middle section of the claimed present invention is impregnated with activated charcoal having millions of tiny pores in the activated carbon. The millions of pores in the activated carbon provide enormous surface area to trap harmful chemicals. The pores in the activated carbon are a function of the size of the charcoal used. The larger the filter, the more the activated carbon, the more chemicals it absorbs and the longer it keeps working. Consequently, it becomes mandatory to find a relationship between the size of the activated carbon and the

amount of such activated carbon used in the middle section. Applicant has addressed the problem of amount and size of activated charcoal and its effect on the inhibition of p-BSQ. This important issue was not addressed by Mentzel et al. A person skilled in the art would not be encouraged to use the cited art to arrive at the claimed present invention, because nowhere does the cited art or Mentzel et al. refer to inhibition of p-BSQ, nitric oxide, or nicotine by taking into account size and amount of charcoal. In addition, there are no other cited references that can be combined together with the presently cited art to arrive at the claimed present invention.

The Office Action states, in part, that Applicant admits that typical charcoal filter cigarettes have a first conventional cellulose acetate fiber filter, acting as the mouthpiece, the length of which may vary according to convenience, e.g. 10-15 mm; a second conventional cellulose acetated fiber filter, acting as a barrier between a charcoal bed and a tobacco portion of the cigarette to prevent infiltration of charcoal into the tobacco, the length of which may be 2-4 mm; and a charcoal filter bed located between the two conventional cellulose fiber filters, the length of the activated charcoal bed varying depending on the amount of charcoal used, e.g. 4.5-5.5 mm per 100 mg; or 9-11 mm per 200 mg; or 13-16 mm per 300 mg, etc. Applicant submits that the length of the mouthpiece cellulose acetate filter (10-15 mm) has practically no role in reducing the p-BSQ content of the mainstream smoke. It merely serves to hold the cigarette in the mouth. Similarly, the length of the cellulose acetate barrier has practically no role in reducing p-BSQ. Applicants further submit that the length of the activated charcoal bed varies depending on the weight and mesh size of the charcoal used. It cannot be fixed for different weight of different mesh sizes of the charcoal. For example, the length of the charcoal bed for 100 mg of BS 72/85 will be different from that for 200 mg of BS 44/52. The 25-100 mesh grain size range has been deleted from claim 1.

An obviousness rejection requires that a reference provide a teaching, suggestion or motivation for a proposed modification. The Mentzel et al. patent does not appear to provide any teaching, suggestion or motivation to be modified for

employment in a typical charcoal filter cigarette of the cited art. As such, the Mentzel et al. patent does not provide a sufficient basis for a section 103(a) rejection of claim 1. Additionally, for the reasons set forth above, even if the teachings of the cited art and Mentzel et al. patents were somehow combined, as attempted by the Examiner, the resulting combination would still be deficient in teaching or suggesting the claimed subject matter. Claim 1 is deemed to be patentable whether the Examiner's references are read individually or in combination.

Dependent claims 53 to 95 depend from claim 1. As such, applicant submits that they are also patentably distinguishable for at least the same reasons as claim 1. Additionally, the dependent claims discussed below are further distinguishable on their own merits.

The cited art provides a generalized pore volume, a pore radius and grain size distribution corresponding to screen mesh width. In contrast, the claimed present invention, after comprehensive study, found out the amount of charcoal particle or charcoal mixture used for a particular grain size to inhibit the p-BSQ of the mainstream and reduction in nitric oxide and nicotine delivery. The concept of relating the amount of activated charcoal particle to the size to be used is an important one and should be taken into account to actually estimate the inhibition in p-BSQ. For these reasons, Applicant submits that claims 54, 58, 59 to 78, 88, and 89 are non-obvious. Claims 54, 58, 59 to 78, 88, and 89 are deemed to be patentable whether the Examiner's references are read individually or in combination.

The Office Action sets forth that regarding claims 11-19, it would have been obvious to one having ordinary skill in the art at the time of the invention, in a effort to achieve optimal adsorption of noxious cigarette smoke constituents, to arrive at the claimed charcoal size and amount, after routine experimentation, since these charcoal grain sizes and amounts are envisioned by the applied prior art. Applicant submits that a filter using a random mixture of non-specific amounts of different mesh size of carbon

particles ranging from 177 microns to 500 microns, as disclosed by Mentzel et al. is technically different from the filter claimed in Applicant's patent application. The percent reduction of p-BSQ from the mainstream smoke depends on the use of a charcoal bed having requisite amounts of specific mesh size of the carbon particles, as shown in Table 1. Table 1 shows that whereas with 200 mg of BS 44/52 mesh size of carbon, the reduction of p-BSQ is only 55%, with 300 mg of 52/60 mesh size, it is 85%, and with a mixture of 100 mg of 60/72 and 100 mg of 72/85, the reduction is 78%. The technical difference between Mentzel et al. and the claimed present invention is that Mentzel et al. uses a charcoal bed having non-specific amounts of different mesh sizes ranging between 177 microns to 500 microns, whereas the claimed present invention uses different charcoal filters having in each case specific amounts of specific mesh size of carbon particles.

The Office Action also sets forth that regarding claims 31 to 39, 46 and 48, it would follow that the filter of Applicant's Admitted Art modified by Mentzel et al. would demonstrate these claimed functions/attributes since structurally, the filter of the applied art is similar, if not substantially identical, to that which is claimed. The Action further argues that where the claimed and prior art product/apparatus is identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. In response, Applicant submits that the present claims give emphasis to the construction of the different charcoal beds, using specific amounts of specific mesh size of charcoal. Applicants respectfully submit that this is grossly different from the construction of the charcoal bed disclosed by Mentzel et al., which does not specify the requisite amounts of specific grain sizes of the carbon particle used. Mentzel et al. uses very non-specific amounts of different carbon particles ranging between 177 microns to 500 microns without mentioning the percentage weight of each mesh size in the mixture. Furthermore, the cellulose acetate part of the filter has practically no role in reducing p-BSQ from the mainstream smoke. Consequently, Applicant submits that the structure recited by Mentzel et al. is not identical or substantially identical to that of the claimed present invention.

Applicant further submits that new dependent claims 79 to 87, 93 and 95 are directed to the inhibition of p-BSQ of the mainstream and reduction in nitric oxide and nicotine delivery. These claims are supported in Figure 3, which describes the protective effect of charcoal filters on the cigarette smoke induced oxidative degradation of guinea pig lung microsomal proteins, and Figure 4 which shows SDS-PAGE of lung microsomal proteins of normal guinea pigs and guinea pigs exposed to smoke from cigarettes with and without charcoal filter. Necessary numerical data are also provided in the specification. Applicant submits that claims 79 to 87, 93 and 95 are non-obvious. Even if the teachings of the cited art and Mentzel et al. patents were somehow combined, as attempted by the Examiner, the resulting combination would still be deficient in teaching or suggesting the claimed subject matter. Claims 79 to 87, 93 and 95 are deemed to be patentable whether the Examiner's references are read individually or in combination. As such, all rejections should be withdrawn since claims 1, and 53 to 95 are clearly in condition for immediate allowance.

In view of the above remarks responsive to the subject Office Action, the applicant believes that the rejections under 35 U.S.C. §§112, second paragraph and 103(a) should be withdrawn. The claims as currently presented distinguish from the art and represent patentable subject matter. Reconsideration and allowance, being in order, are earnestly solicited. Should there be further issues, the undersigned would welcome a telephone call to facilitate their resolution.

Respectfully submitted,

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